

ABSTRACT

An aerosol of a powder composed of helium carrier gas and particles of a hexagonal aluminum nitride is charged through a transfer pipe 3 into a film deposition chamber 4 whose interior is depressurized by gas evacuation using a vacuum pump 5 to maintain a degree of vacuum of 200 – 8000 Pa during supply of the carrier gas and the aerosol is blown from a nozzle 6 provided on the end of the transfer pipe 3 inside the film deposition chamber 4 to impinge on a substrate fastened to a substrate holder 7 to make the impact force of the particles at collision with the substrate 4 GPa or greater, thereby transforming the crystal structure of the aluminum nitride from hexagonal to cubic to deposit cubic aluminum nitride on the substrate. As a result, a method of transforming the crystal structure of a Group XIII nitride is provided that enables transformation of a Group XIII nitride to cubic crystal structure using a system of simpler configuration than that used for transforming the crystal structure of a Group XIII nitride by a static pressure application process.